Nearly half a century ago, D. W. Kaufman investigated the effect of prey camouflage on predation. Kaufman tested the hypothesis that the amount of contrast between the coat color of a mouse and the color of its surroundings would affect the rate of nighttime predation by owls. He also hypothesized that the color contrast would be affected by the amount of moonlight. In this exercise, you will analyze data from his owl-mouse predation studies.

Pairs of mice (*Peromyscus polionotus*) with different coat colors, one light brown and one dark brown, were released simultaneously into an enclosure that contained a hungry owl. The researcher recorded the color of the mouse that was first caught by the owl. If the owl did not catch either mouse within 15 minutes, the test was recorded as a zero. The release trials were repeated multiple times in enclosures with either a dark-colored soil surface or a light-colored soil surface. The presence or absence of moonlight during each assay was recorded.

The graph shows data from the light-colored soil enclosure. There is one dependent variable and more than one independent variable on the graph. What are the **independent variables**, the variables that were manipulated by the researcher?

a) the color of the soil and the presence or absence of moonlight

b) the presence or absence of moonlight and the number of mice caught

c) mouse coat color and the presence or absence of moonlight

d) mouse coat color and the number of mice caught

A: Light-colored soil
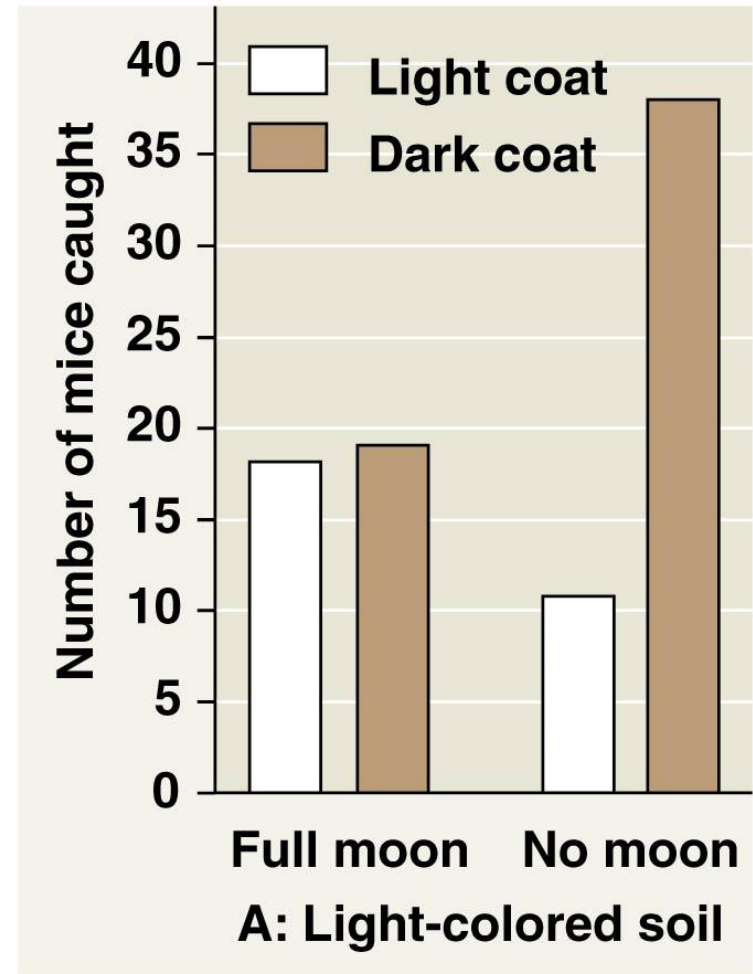
What is the **dependent variable**, the response to the variables being tested?

a) the presence or absence of moonlight

b) the mouse coat color

c) the number of mice caught

d) the color of the soil

A: Light-colored soil
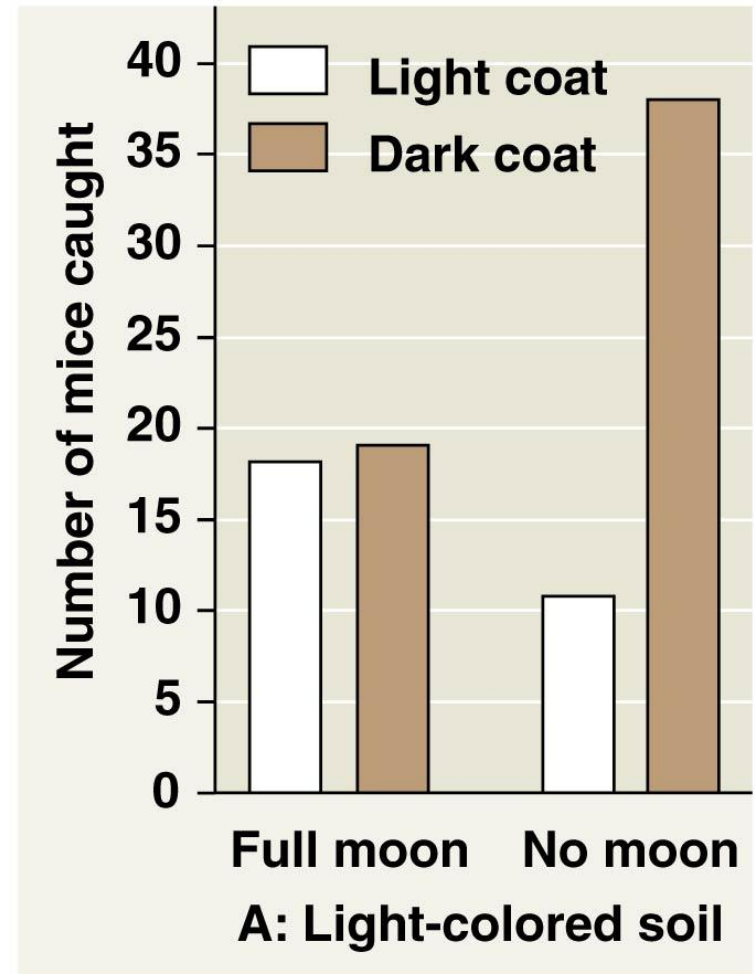
Now you will look at data from two different enclosures: one with light-colored soil (left), and one with dark-colored soil (right). How many dark brown mice were caught in the light-colored soil enclosure on a moonlit night?

a) 12

b) 17

c) 19

d) 37
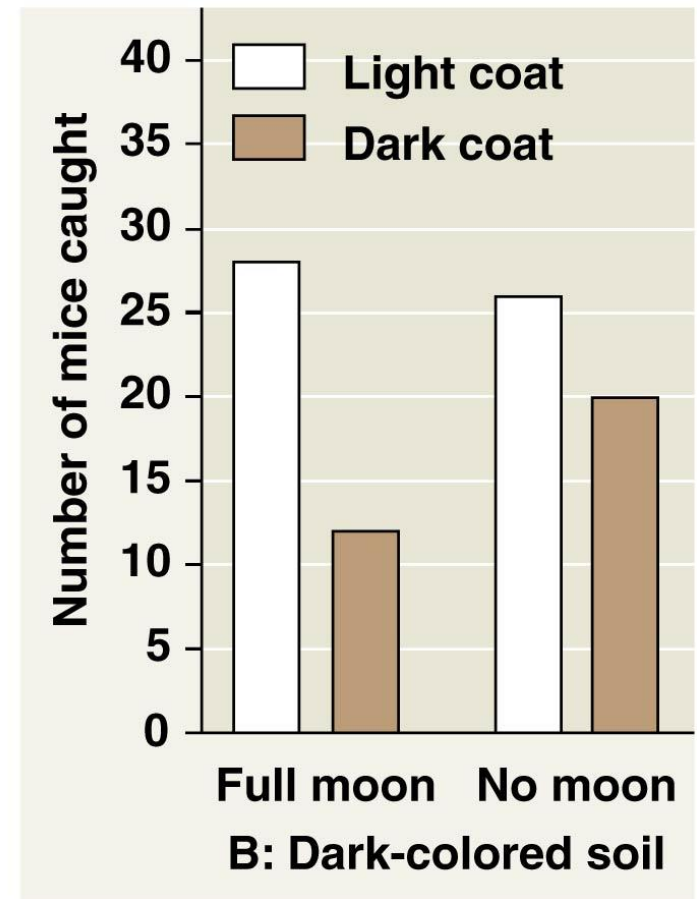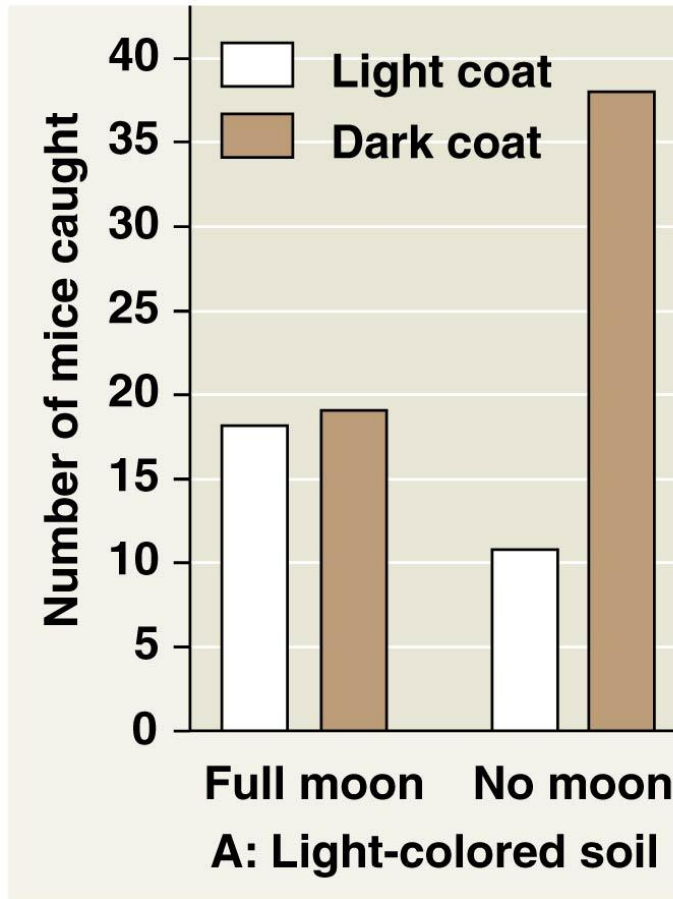
On a moonlit night, would a dark brown mouse be more likely to escape predation by owls on dark- or light-colored soil? What data support your conclusion?

a) On light-colored soil; the lowest level of predation was light brown mice on light soil.

b) On dark-colored soil; fewer light brown mice than dark brown mice were caught on light soil under no moon.

c) On dark-colored soil; fewer dark brown mice were caught on dark soil than on light soil under a full moon.

d) On light-colored soil; fewer dark brown mice were caught on dark soil than on light soil under a full moon.
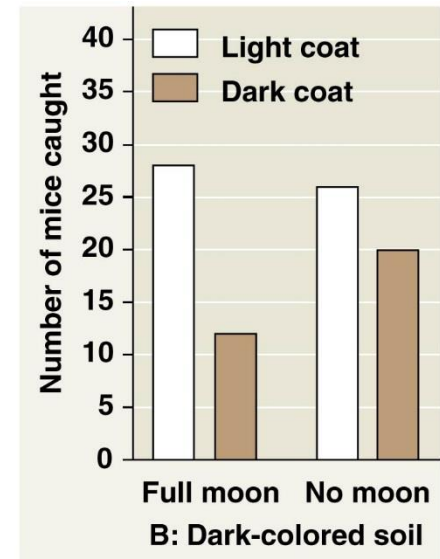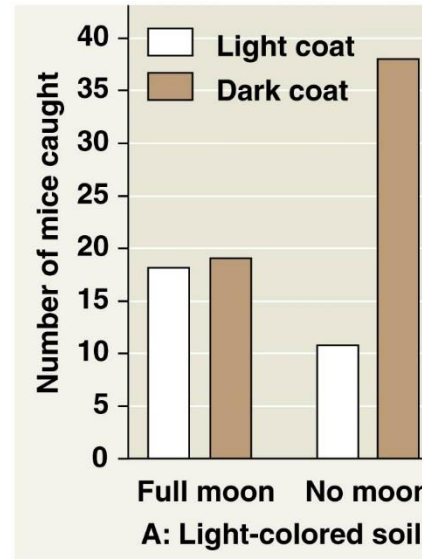
What combination of independent variables led to the highest predation level in enclosures with light-colored soil?

a) light brown coat with no moon

b) light brown coat with full moon

c) dark brown coat with full moon

d) dark brown coat with no moon